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Submission date: 28-Jul-2020 07:16PM (UTC+0700)

Submission ID: 1363211735

File name: ing_system_of_horticultural_commodity_development_in_Pinggan.pdf (1.05M)

Word count: 3488

Character count: 20215

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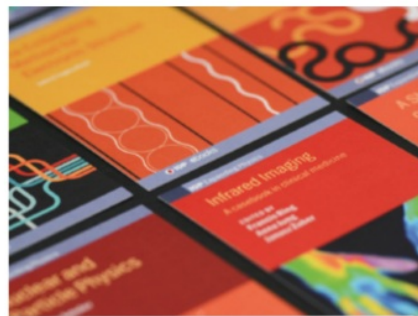
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To cite this article: I G B Udayana *et al* 2019 *J. Phys.: Conf. Ser.* **1402** 033075

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The modeling system of horticultural commodity development in Pinggan village, Bangli regency, Bali Province

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Abstract. Pinggan Village, located in the province of Bali, is located in the highlands, this village is a producer of horticultural commodities in the region of Bali. In discussing horticultural issues, it is also important to know the typical characteristics of Horticulture products, namely: easily damaged in transportation, overflowing / seasonal, rarely in other seasons, and sharp price fluctuations. Modeling system in the development of horticultural commodities in the province of Bali has not been done much. This research is oriented towards achieving goals and ease of operation, for this reason, the analytical method used will be adjusted according to the type and purpose of the research itself. The descriptive analysis method used in this type of research has the objective of obtaining information and factual descriptions and phenomena systematically and accurately, such as regional profile assessments, social engineering, and market potential assessments. The results of this study indicate that some constraints on the production of horticulture crops are that cultivation still needs to be improved in three commodities, including the development of fertilization, maintenance of a healthy garden environment, prevention of pests, water problems and markets.

1. Introduction

One indicator of food security is access to food. For non-food producing regions, food security can be achieved through increased access to food. National food needs continue to increase along with the growth of the Indonesian population. This pressure is getting bigger, because national food is only based on rice, with the need of 32.49 million tons (2010). Thus, the development of local staple food and its industrialization is indispensable for national food security. Currently, the planting area of Indonesian vegetables is only 40 m² per capita. This figure is far behind from China which is 200 m² per capita and Thailand which is 100 m² per capita. Farmers' ownership of cultivated land is also low.

Indonesian farmers on average have only 0.2-0.3 ha per farmer. In addition, the consumption of vegetables in Indonesia is only 40 kg/capita/ year. This figure is lower than the standard World Food Agency (FAO) which pegs 80 kg /capita/year. As for import, in 2011, the import value of horticultural products reached 17.6 trillion. For 2014, it is estimated that the volume of horticultural imports will reach 600 thousand tons, up 50 percent compared to last year's 400 thousand tons [1]. The role of horticulture is: a) Improving the nutrition of the people, b) increasing the country's foreign exchange, c) expanding employment opportunities, d) increasing farmer's income, and e) meeting the needs of beauty and environmental sustainability. However, in discussing horticulture issues, it is also important to note the typical characteristics of horticultural products, namely: a). (B) voluminous, c) perishable in transportation, d) overflow / seasonally and rarely in other seasons, and e) sharp price fluctuations [2].



By knowing the benefits and characteristics of the typical, in the development of horticulture in order to succeed well then needed a deeper knowledge of the horticultural problem. Village Pinggan Kintamani District, Bangli Regency Bali Province is located in the highlands, not the main food producer but is the horticultural center in Bali area. So far, the horticultural product market in the region has been competing with horticultural supplies from Java. Some phenomenon of horticultural agribusiness problem in research location is: not yet optimal technique of cultivation, often The occurrence of excess supply (excess supply), not yet familiar with processing technology, not optimal the role of institutions at the level of farmers and not yet the formation of networks with stakeholders. Based on that, it is very suitable if, in the Pinggan area, the clusters of agro-industrial products of horticulture derivatives (use of fruit, leaves, stems, and plants) are developed. Therefore, it is necessary to conduct comprehensive activities which include: (1) developing technology of horticultural cultivation and development of horticultural foodstuff (RPL), (2) social engineering and technology of horticultural derivative products to increase added value; (3) dissemination of technology and social engineering Implementation of RPL, (3) commercialization of horticultural derivative products and developing marketing systems; and (4) institutional strengthening at the farm level through networking arrangements between farmer organizations (farmers and cooperatives), governments and stakeholders. The four things are done simultaneously starting from the provision of raw materials, social engineering, and technology, market development by involving various stakeholders. It is expected that at the end of this research activity can bring clusters of agroindustry and formed Area of Sustainable Food House (KRPL) based on horticulture. The success of this program will trigger the growth of rural agroindustry made from raw and local technology, so that it can increase the absorption of manpower, increasing the income of the community which ultimately improve the access of better food. The high level of food access will strengthen food security in the community in Pinggan Village, Kintamani District, Bangli Regency, Bali Province. In addition, derivative products produced based on Zero Waste so as not to cause waste but all components of horticultural commodities can be utilized.

Long-term research objectives are expected to have a significant impact on income generation, resulting in increased access of farm households to family food. Although physically staple food products are not produced in Pinggan, but the availability of pagan is sufficient through access to affordable food from family income. Besides, the increasing of agro-industry activity and sustainable food house will have an impact on economic growth and job opening so that it will increase food security. In particular, this activity aims to develop horticulture based agroindustry in the Village area Pinggan Kintamani District with a variety of activities of horticultural crops namely chili, tomato, and pumpkin

Some of the phenomena of horticultural agribusiness problems in research locations include: not optimal farming techniques, frequent excess supply, not yet familiar with processing technology, the role of institutions at the farm level is not optimal and networks with stakeholders have not been established.

Based on that, agro-industry clusters of horticulture derivative products are developed in the suburbs (utilization of fruit, leaves, stems, and plants). For this reason, comprehensive activities are needed that include: (1) developing horticulture-based sustainable food cultivation (RPL) technology and development, (2) social engineering and horticultural derivative technology to increase added value, (3) conducting technology dissemination and social engineering the application of RPL, (3) commercialization of horticulture derivatives and developing a marketing system, and (4) institutional strengthening at the farm level through the establishment of networks between farmer institutions (farmer groups and cooperatives), government and stakeholders. The four things are done simultaneously starting from the provision of raw materials, social engineering, and technology, market development by involving various stakeholders.



Figure 1. *Labu siam* and tomato plants.

2. Methods

2.1. Implementing research data

In the process of implementing this research, data sources are obtained through primary data and secondary data relating to the implementation of activities in the modeling system. Primary data is collected from sample farmers, administrators or managers from several market players in horticulture plants and secondary data obtained from the statistics center, processed data from the Department of Agriculture and horticulture of Bali Province, and reference literature. The data collection techniques were carried out by 1) questionnaire spread, 2) interviews and 3) forming Focus discussion groups (FGD). The use of questionnaire techniques in this study has several objectives, namely to obtain information relating to the purpose of research and to obtain information that has high reliability. In conducting interviews, the technique used is to ask directly to the sample/respondent and aim:

To create a good relationship with respondents / samples, to be able to convey all questions correctly and correctly and apply direct questions, to be able to record all verbal responses from respondents / samples carefully and clearly by asking again if it is not clear, and to explore additional information related to the purpose of this study.

FGDs are needed to obtain more comprehensive information or data because it involves several people in discussions that invite active participation from discussion participants. Discussion participants came from the farmer level, farmer organizations (subak), company-level managers or other companies. The study team acted as the facilitator in this discussion.

The library study conducted in this study aims to obtain information/data relating to the purpose of this study, namely through the study of research books or scientific magazines and others that have been published or documented in the library.

The purpose of data collection:

- Review, observe, measure and record parameters relating to the application of fair trade methods in the healthy rice trading system;
- Determine the environmental quality of various environmental parameters that are expected to be significantly affected by project activities,
- Assessing, observing, measuring, and recording components of planned activities that are expected to cause a large and significant impact on the surrounding environment,
- Predict changes in initial environmental quality due to project activities.

- Predict the return of something lost due to changes in environmental quality due to project activities.

The location of data collection is determined in the designated area spread in the village of Pingan. Some of the data collected involve related technical, social, agro-economic and business variables.

The social indicators examined in this study are on social ties between farmers, social ties between farmers and farmer organizations (subak), social ties between farmer managers, and social ties between farmer organizations and the government. Agro-economic indicators are carried out on wetland areas, planting intensity, planting patterns and planting schedules, choice of varieties, use of agricultural inputs, use of agricultural tools and machinery, use of labor, use of cultivation technology, input prices, processing, products, storage, marketing, and output/yield prices. On business indicators, access is made to users to the horticulture market, and to access finance.

2.2. Data analysis

Data analysis will be carried out by agricultural analysis and Value Chain Analysis (VCA) in addition to descriptively. Value Chain Analysis is one of the attachment concepts to increase activity and maximize product value in the order of the supply chain. The stages of VCA activities are as follows:

- Presenting a real problem situation,
- Analyzing the situation of stakeholders together with analysis of value chains, institutions, social systems,
- Arrange the sequence of problems faced,
- Perform repairs and solutions to existing problems through system identification, model design, suggestions for improvement

3. Results

Table 1. Results of research on rural horticulture problems.

No	Problem	Alternative	Activity
1	The lack of availability of organic fertilizer	Application of SOP for making organic fertilizers among farmers/farmer groups	1. Community empowerment in making organic fertilizers 2. Economic study on the use of organic fertilizers
2	Horticulture is not optimal	Application of SOP for horticulture through the provision of seeds, tillage, fertilization, management of irrigation systems, and control of plant pests and diseases that are in accordance with the conditions of various seasons	1. Development (this development?) Of cultivation technology and its implementation 2. Development of tillage tools and their implementation
3	Excess supply occurred	Application of fresh horticulture product waste treatment	Technology study if horticultural / product waste is damaged

Table 1. Cont.

	Availability of horticulture raw materials for family food security	Application of the concept of Sustainable Food House Region	<ol style="list-style-type: none"> 1. KRPL technology degree to achieve food security 2. Empowerment group of women farmers in the implementation of Sustainable Food House Area
4	Processing technology has not been mastered	The introduction of processing technology at the farm household level includes processed squash, tomatoes, and chili	<ol style="list-style-type: none"> 1. Processing of chayote into chips, sweets, sweets, dodol. 2. Processing Chili into Sauce, chili powder. 3. Tomatoes become candied tomatoes, tomato dodol tomato candy

4. Discussion

4.1. Research approach

With a research approach that is more oriented towards achieving goals and ease of operation, the analytical methods used are tailored to the type and purpose of the study. The descriptive analysis method is used for this type of research which aims to obtain information and description of the factual conditions and phenomena of events systematically and accurately, such as regional profile assessments, social engineering, and market potential assessments. The results of the analysis are presented in the form of numerical numbers, tables or graphs so that they are easier to understand, meaningful, and able to provide useful information [3]. Spatial information and attributes from the results of mapping the production potential and market for horticultural commodity industries are visualized using Geographic Information Systems (GIS). According to Turban GIS is a computer-based system for capturing, storing, checking, integrating, manipulating and displaying data with digital maps [4]. The GIS function is to improve the ability to analyze spatial information in an integrated manner for planning and decision making. GIS can provide information to decision makers to analyze and apply spatial databases so that it is easier to see phenomena with a better perspective [5]. For the development of cultivation of horticulture crops, harvesting tools and their products use the comparison method. Comparative research aims to find answers fundamentally about causation, by analyzing the causal factors or the emergence of certain phenomena. With this method generalization of the level of comparison can be made based on a perspective or framework only so that it can determine which alternative is better and preferred to be chosen [6].

The ISM (Interpretative Structural Modeling (ISM) method is used to determine the appropriate institutional structure and form in horticultural management. The ISM technique is a group learning process in which structural models are produced to photograph complicated problems through carefully designed patterns using patterns designed using graphics and sentences This method is done by arranging hierarchies and classifying sub-elements. The basic principle is to identify from the structure

of institutional systems that provide high-value, effective and operational benefits [7,8]. This horticultural management system model is developed using a system approach method. developed to build system configurations and scientific relationships Heuristic techniques are suitable for handling unstructured and difficult to solve problems, although this technique does not have a search algorithm for op that is definitely a lead solution but has rules that can explore the most promising search space, namely space for optimal or near-optimal solutions that can be used to solve complex problems. In heuristic algorithms, approaches are easier, faster and have good approximate results developed [7]. The resulting model is then poured in the form of computer applications that are integrated with the operating system on mobile phones. Many socialization and community empowerment activities during the research, such as the development of added value in the bamboo industry, management development and workshops of PLTB were used in participatory methods through internal training. This method is very effective because of the direct involvement of the community (community) in activities. The effectiveness of this activity was then assessed using rapid assessment techniques developed using assessment techniques [9].

The problem discussed here requires the use of the right research approach. A system approach is a comprehensive approach that can handle complex and uncertain systems. According to the system approach, there are six stages of analysis before synthesis, namely (a) needs analysis; (B) system identification; (C) problem formulation; (D) system modeling; (E) model verification and validation; And (f) the implementation model.

System identification is a chain of relationships between system statement requirements and specific statements of problems being resolved. Identification systems are studied in the form of diagrams. The diagram used is then translated into an input-output diagram (black box diagram). The causes and effects of various related systems and their interactions are those that explain system requirements and problems. Administratively, this village is divided into one work area of the Banjar Service, namely the Banjar Pinggan Service. In running the government as an assistant at the Banjar Village Service level. In addition, it consists of villages suitable for village planning.

Economically, the suburban village can be mapped to 500 ha of horticulture areas, 350 ha of forest, 410 ha of plantations, ravines and critical areas of protection for 200 ha, and the rest for public facilities and settlements.

At present, the 700 ha of village land in the agricultural area is planted with 300 hectares with 646 farmers. Squash ownership ranges from 25 to 50 hectares/farmer. Planted with Chile covering an area of 30 ha from 646 farmers. Farmers' land for Chilean cultivation ranged from 50 to 75 hectares/farmer and planted TOMAT with an area of 50 ha from 646 farmers. Farmers' land ownership for Chile ranges from 15-25 acres/farmer. But there are still many obstacles that need to be corrected.

Constraints on the production of horticultural crops are still important, including fertilization, maintaining a healthy garden environment, water problems, and markets.

5. Conclusions

Administratively Pinggan village is divided into one working area of Banjar Dinas namely Banjar Pinggan Service. In running the government as a maid at the level of Banjar Pinggan Village Service. In addition, it consists of three villages Preparation of other villages which according to the prevailing provisions is clearly not justified so often lead to conflict between the village Preparation with Pinggan Village residents.

Economically, Pinggan Village area can be mapped to 500 ha of horticulture area, 350 Ha forest, 410 ha plantation, chasm, and critical area protection 200 Ha, and the rest for public facilities and settlement.

Currently, the area of agricultural land in Pinggan Village 700 ha is planted with 300 hectares of 646 farmers. Ownership of farmers' land for planting squash ranges from 25 to 50 acres/farmers. Planted with chili area of 30 ha from 646 farmers. Ownership of farmers' land for chili planting ranges from 50 to 75 acres/farmers and planted tomato of 50 ha from 646 farmers. Ownership of farmers' land for chili is ranged between 15 - 25 are / farmers. But there are still many obstacles that need to be fixed.

The constraints on the production of horticultural crops is the cultivation still needs to be improved

on the three commodities, including fertilization, maintaining a healthy garden environment pest prevention, water, and market problems.

In addition, from the results of the study, it is expected that the development of horticultural crops in the village should be developed into finished products such as dodol, sweets, refreshments for drinks and sauces for chilies and tomatoes.

Acknowledgments

The researcher would like to thank the Warmadewa University Research Institute for funding this research.

References

- [1] Hari P 2014 Hubungan Antara Pertumbuhan Ekonomi, Belanja Pembangunan dan Pendapatan Asli Daerah *Procedding Symposium Akuntansi Padang*
- [2] Notodimedjo S 1997 *Trategi Pengembangan Hortikultura Khususnya Buah-Buahan Dalam Menyongsong Era Pasar Bebas*
- [3] Arikunto S 2007 *Prosedur Penelitian Suatu Pendekatan Praktek* Edisi Revisi VI hal 134, (Rineka Apta, Jakarta)
- [4] Turban E 2005 *Decision Support Systems and Intelligent Systems Indonesian Edition 1*, (Andi, Yogyakarta)
- [5] Prahasta E 2002 *Konsep-konsep Dasar Sistem Informasi Geografis* (Bandung: Informat)
- [6] Nazir M 1985 *Metode Penelitian* (Jakarta : Ghalia Indonesia)
- [7] Schmidt A 1997 The yeast phosphatidylinositol kinase homolog TOR2 activates RHO1 and RHO2 via the exchange factor ROM2. *Cell* **88**(4):531-42
- [8] Eriyatno 1999 *Ilmu Sistem; Meningkatkan Mutu dan Efektivitas Manajemen* (IPB Press: Bogor)
- [9] Azar FS 2000 Multiattribute Decision Making: Use of Three Scoring Methods to Compare The Performance of Imaging Techniques for Breast Cancer Detection, Univ. Of Pennsylvania, Philadelphia

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